

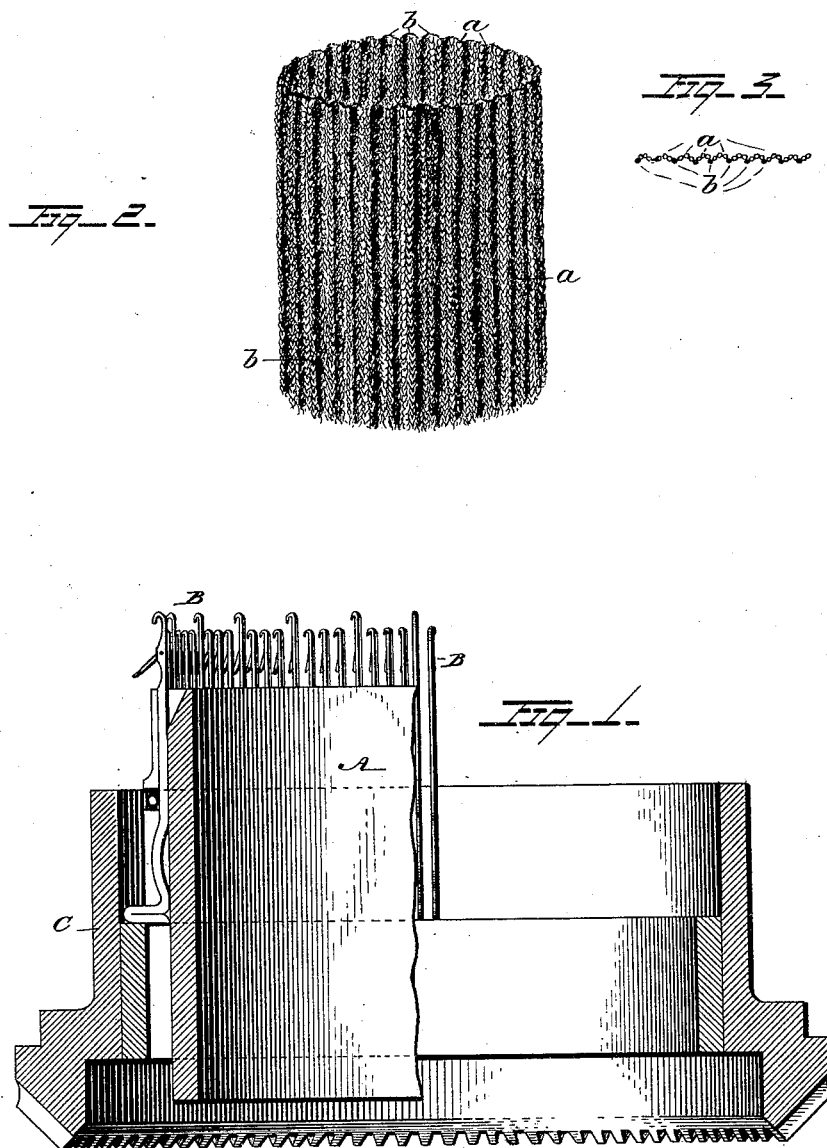
(No Model.)

2 Sheets—Sheet 1.

C. WINTERBOTTOM.  
CIRCULAR KNITTING MACHINE.

No. 420,505.

Patented Feb. 4, 1890.



WITNESSES:

*John Nolan*  
*Herman Gustow*

INVENTOR

*Charles Winterbottom*,  
BY *Joshua Pusey*,  
ATTORNEY

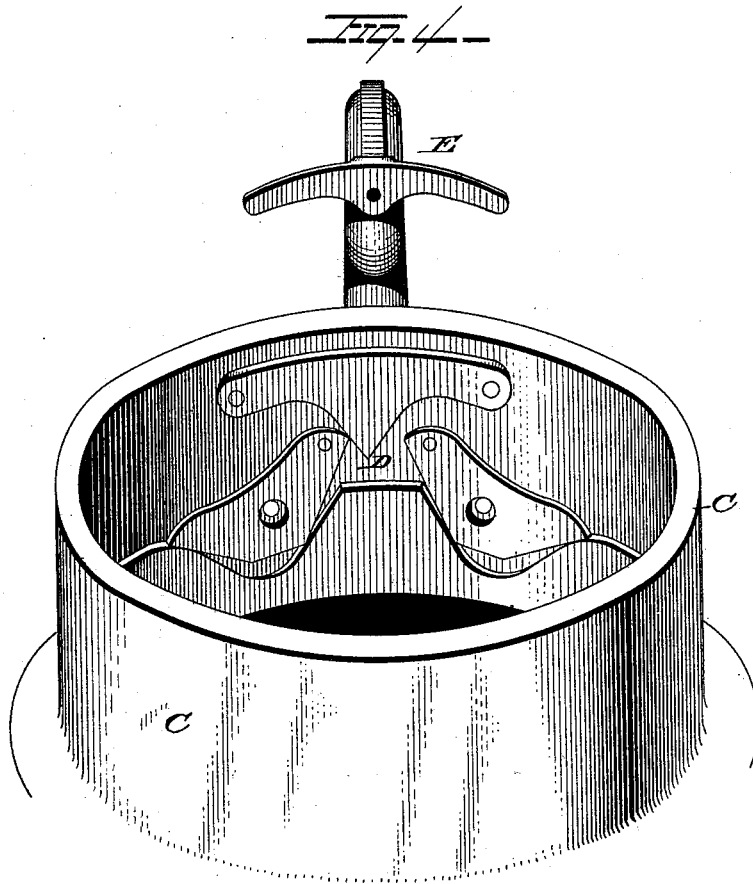
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Witnesses:

*John Nolan*  
*J. White Murren.*

Inventor

*Charles Winterbottom,*  
*per Joshua Pusey,*  
*Atty.*

# UNITED STATES PATENT OFFICE.

CHARLES WINTERBOTTOM, OF OCEAN GROVE, NEW JERSEY.

## CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,505, dated February 4, 1890.

Application filed February 28, 1889. Serial No. 301,507. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES WINTERBOTTOM, a citizen of the United States, residing at Ocean Grove, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Circular-Knitting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a vertical section of part of a knitting-machine (the usual and well-known cams or needle-operating devices not being shown) in which my improvement is embodied. Fig. 2 represents a portion of a circular web—such as the top of a stocking—knit by the machine. Fig. 3 is a transverse section of the fabric, showing the ribbed effect produced. Fig. 4 is a perspective of a portion of the cam-cylinder, showing the cams therein and the yarn-guide.

The object of this invention is to produce, by means of a simple improvement in the construction of ordinary knitting-machines, stockings or other hosiery having a ribbed effect.

The improvement consists in the combination, with needle-carrying and actuating mechanism of a knitting-machine, of needles arranged in sets, the needles of alternate sets having their hooks caused to descend to different distances with relation to the top of the needle-carrier, whereby the said ribbed effect is produced.

The invention consists, also, in the particular construction shown for producing the effect desired, consisting of one or more relatively long needles alternating with one or more relatively short needles, in combination with a needle-carrying device and actuating mechanism having a cam for operating the needles in common, together with a suitable yarn-carrier, as hereinafter explained and duly claimed.

Referring to Fig. 1 of the annexed drawings—in which is shown as an example a portion of a latch-needle circular-knitting machine, such as the well-known Branson machine, illustrated in the Reissued Letters Patent No. 10,271, dated January 16, 1883—A rep-

resents a section of the needle-cylinder with needles B, and C the cam-cylinder. It will be seen that the needles are arranged in series as follows: three short and one relatively long, alternately—that is, the tops of the latter needles projecting, say, one-eighth of an inch above the other or short needles. This specific arrangement of needles is used as an illustration, as it will be understood the number and arrangement of the short and long needles may be varied as desired. For example, there may be a series of two short and two long needles, or four short and two long, &c.

D, Fig. 4, represents the needle-actuating cams, and E the yarn-guide for delivering the yarn into all the needle-hooks in the usual manner.

Following is the operation: As the knitting proceeds in the usual manner, (the machine being preferably adjusted for the making of loose stitches,) the short needles make comparatively loose stitches and the long needles make comparatively tight stitches, thus using a less quantity of yarn in the line of the short needles than is used by the long needles. The consequence is, the lines of short-needle or long stitches *a* are thrown on the inside of the web and the lines of long-needle or short stitches *b* are relatively raised therefrom, thus producing the fabric that has the ribbed effect shown in Figs. 2 and 3. This fabric is more elastic laterally than if knit entirely with uniform stitches, unless these should be made very loosely, and, in fact, too loosely for ordinary use.

I remark that in knitting-machines such as the "Branson," hereinbefore referred to, wherein the needles may be readily taken out and inserted, (as described in said Branson reissue patent,) a part of the web—such as the foot portion of a stocking—may be knit plain and the other part ribbed, as desired, as in order to knit a plain portion it is merely requisite to lift out the long needles and substitute therefor the shorter needles, and then to proceed with the ribbing by reinserting the long needles. Thus the transferring of the web from the plain to the ribbing machines, and vice versa, is obviated. In this way, also, I am enabled to produce a ribbed knit fabric

without the "dial" needles and mechanism for actuating the same which have been heretofore used for making ribbed work.

5 Having thus described my invention, I claim as new and wish to secure by Letters Patent—

10 1. The combination, with the needle-carrying device and needle-actuating cams, of needles arranged in sets, the needles of alternate sets on the carrier constructed to have their hooks descend to different distances with relation to the upper edge of the carrier, whereby a rib-stitch effect is produced, substantially as set forth.

15 2. In a knitting-machine, the combination,

with the needle-carrying device and needles of different lengths, one or more long needles alternating with one or more short needles, of actuating mechanism having a cam for operating the needles in common, and a yarn- 20 guide for delivering the yarn into the hooks of all the needles, whereby a rib-stitch effect is produced, substantially as described.

In testimony whereof I have hereunto affixed my signature this 26th day of February, A. D. 1889.

CHARLES WINTERBOTTOM.

Witnesses:

I. N. BEEGLE,

W. H. BEEGLE.